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THE QUANTITY, MONEY VALUE, AND NUTRITIVE VALUE OF FOOD CONSUMED BY 86 FARM FAMILIES IN FRANKLIN COUNTY, VERMONT, IN 1923-24

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A Preliminary Report

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THE QUANTITY, MONEY VALUE, AND NUTRITIVE VALUE OF FOOD CONSUMED BY 86 FARM FAMILIES IN FRANKLIN COUNTY, VERMONT, IN 1923-24

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During the last five years about 4,000 records of the quantity and value of goods consumed by the farm family have been collected by the Bureaus of Home Economics and of Agricultural Economics, of the United States Department of Agriculture. Some 3,000 of these records have been analyzed, and summaries of the average standard of living on the farm have been published (5, 6).[1] Detailed analysis of the food and clothing consumption on the farm is being made in the Bureau of Home Economics, and two preliminary reports dealing with such consumption in Kansas, Kentucky, Missouri, and Ohio are now available (2,4). The present report deals with the food consumed on 86 farms in Enosburg township, Franklin County, Vermont. The records from which the data were obtained covered the year ending June 1, 1924.

METHOD OF COLLECTING AND ANALYZING FOOD CONSUMPTION DATA

The figures on food consumption presented in this report were collected by the survey method. A schedule was prepared by the two bureaus for use in collecting the data. Specially trained agents, drawn chiefly from the Bureau of Home Economics of the United States Department of Agriculture and the Extension Service of the University of Vermont, visited the homemakers and obtained the desired information from them. This included records not only of food con-

[1] Reference is made by number to "List of References," p. 25.

sumption but of all items that go to make up the family living. The food data that were collected covered the quantity and value of each foodstuff consumed, both furnished by the farm and purchased.

The prices for the different foodstuffs recorded on the schedules are not on a strictly comparable basis. The prices for purchased foods were those paid by the homemaker at the grocery or market. The foodstuffs furnished by the farm were valued at the prices that would have been received had they been sold in the local market.

The families included in the study were chosen by a house to house canvass of the English-speaking white families and are probably typical of the locality in which they resided. Each household had an adult male acting as farm operator, and an adult female as homemaker. The number of children living at home ranged from none to six.

In arriving at comparable food consumption figures it is necessary to allow for differences in consumption according to sex, age, and activity. This is usually done by the use of a dietary scale in which the needs of the women and children are expressed in terms of man's requirement. The number of adult-male units included in the study was calculated by the use of a double dietary scale which has been worked out by the writer. In all of the studies made heretofore a single scale based on energy requirement alone has been employed. Recent work on the nutritive requirement of the child has brought out the fact that the growing child needs relatively more protein and minerals than the adult male. In order to provide for this need when analyzing the family diet, two dietary scales are necessary, one for the energy need of the family, the other for its protein and mineral needs. The double scale used in this study is as follows:

	Age-	For energy	For protein and minerals
Adult male	18 to 60	1.2	1.1
Adult male	Over 60	1.0	1.0
Adult female	18 to 60	1.0	0.9
Adult female	Over 60	0.7	0.7
Boy	15 to 18	1.2	1.6
Girl	15 to 18	0.9	1.2
Child	11 to 14	0.9	1.2
Child	6 to 10	0.7	0.9
Child	Under 6	0.4	0.6

The term adult-male unit, usually expressed as 1.0, refers to the nutritive requirement of a moderately active man weighing 150 pounds. Because of the relatively great activity of adults on the farm, the factor 1.2 was used to express the energy need of the man, and instead of the usual factor 0.8 for the woman 1.0 was employed. The factors 1.1 and 0.9 were used respectively to indicate their protein and mineral needs.

In calculating the number of adult-male units in the families studied, any person who lived in the home more than two weeks of the year was counted for the time he was present. That is, if a hired man lived for three months in the home, his energy requirement was considered as 0.3, or one-fourth that of an adult-male. By the use of this double scale it was found that the average family's energy need was equivalent to that of 4.8 adult-male units, and its need of protein and mineral to that of 5.0 adult-male units.[2]

The food consumption data are presented in Table 6. Consumption figures in pounds and value are given for the various foodstuffs included in the farm diet in terms of the amount used per year by the average family and by the average adult-male unit. These were obtained by dividing the total amount consumed by

[2]The exact figures are 4.787 adult male units for energy and 5.00 for protein and mineral.

the total number of families and by the total number of energy units included in the study. The number of families that used each foodstuff and the proportion of each foodstuff purchased are also given.

Food consumption figures have little meaning for the person interested in optimum consumption unless they are expressed in terms of nutritive value. The figures collected in Vermont were therefore analyzed to ascertain the amount of energy, protein, and minerals yielded by the food consumed. The data were studied from two points of view. The figures shown in Table 6 were first analyzed to find out what the food consumed by the average family was furnishing in the way of nutrients, and then the diet used by the individual family was studied to see how great a deviation from the average there was in the food consumed by each family. The relation of the money value of the diet to the nutrients yielded by the food is also included in the study.

It may be desirable to illustrate the method used in making these calculations and evaluations. The amount of nutrients available per adult-male unit was obtained by dividing the total energy yield of the average family diet, as given in Table 6, by the factor 4.8, which expresses the energy need of the average family in this study, and by dividing the total protein, calcium, phosphorus, and iron furnished by the diet by the factor 5.0, which expresses its protein and mineral need in terms of adult-male units. The adequacy of the diet was then estimated by comparing the results obtained, after reducing those figures to the per-day basis, with the following standard: 3,300 calories, 83 grams protein, 0.77 gram calcium, 1.45 grams phosphorus, and 0.0165 gram iron (7, pp. 515-542). An allowance of 10 per cent for waste is made in this standard. The diet of each family was also analyzed by the same method.

THE FOOD HABITS OF VERMONT FARM FAMILIES

The nutrients yielded by the average diet in Franklin County, Vermont, are given in Tables 1 and 2. These show the amount of energy, protein, calcium, phosphorus, and iron consumed per man per day, as well as the distribution of energy among the six food groups. For comparison, figures are also given for a standard of good nutrition and for three other studies of food consumption (3, 4, 8).

A comparison of the average diet of these farm families with the standard of good nutrition indicates that it supplied 16 per cent more energy, 26 per cent more protein, 50 per cent more calcium, 23 per cent more phosphorus, and 17 per cent more iron than is estimated as needed.

A study of Table 2 shows that on the whole this excess of nutrients is caused not by the overestimation of any one food group but of all the foodstuffs. The distribution of energy among the various food groups, however, is similar on the whole to that in the standard. There are but two exceptions. Milk and cream furnished a larger proportion of the diet in Vermont than our standard provides for. This is probably the cause of the high figure for calcium. Fruit and vegetables, on the other hand, were used in much smaller quantities than are considered desirable.

In order to evaluate these results for the average diet, it is necessary to know how representative they are of the food habits of the 86 families included in the study. This is shown in Table 3. Here the families are classified according to the type of their diet. In group 1 are those diets that contain less than 3,300 calories, 83 grams of protein, 0.77 gram of calcium,

Table 1. - Nutritive value of the average diet in four food consumption studies, in terms of energy, protein, calcium, phosphorus, and iron, compared with a standard of good nutrition.

Study	Nutritive value per man per day									
	Energy		Protein		Calcium		Phosphorus		Iron	
	Calories	% of standard	Grams	% of standard	Grams	% of standard	grams	% of standard	Gram	% of standard
Standards*	3300	100	83	100	0.77	100	1.45	100	0.0165	100
Hawley										
Vermont	3830	116	103	126	1.16	150	1.78	123	0.0193	117
Av.Kan., Ky.,Mo., O.	4370	132	121	143	1.22	158	2.05	141	0.021	127
Funk	4260	129	128	156	1.15	150	2.12	146	0.023	139
Labor Statistics	2820	85	85	104	0.72	94	1.37	95	0.014	85

Table 2. - The distribution of energy among the various food groups in four food consumption studies, compared with a standard of good nutrition.

Study	Meat, Eggs, Cheese		Milk, cream		Fatty foods		Sweets		Cereals		Fruits vegetables	
	Cal. per man per day	% of total cal.	Cal. per man per day	% of total cal.	Cal. per man per day	% of total cal.	Cal. per man per day	% of total cal.	Cal. per man per day	% of total cal.	Cal. per man per day	% of total cal.
Standard*	460	14-15	369	10-12	620	16-17	350	10-11	880	28-25	630	18-20
Hawley												
Vermont	501	13	553	14	628	17	519	13	1098	29	530	14
Av.Kan., Ky.,Mo.,O.	713	16	661	15	764	18	476	11	1195	27	561	13
Funk	580	14	400	9	710	17	500	12	1280	30	790	18
Labor Statistics	422	15	229	8	434	15	256	9	1094	39	385	14

* This standard allows 10 per cent for waste of foodstuffs in the house.

1.45 grams of phosphorus, and 0.0165 gram of iron. In group II are those that contain 3,300 to 3,600 calories, 33 to 90 grams of protein, 0.77 to 0.84 gram of calcium, 1.45 to 1.58 grams of phosphorus, and 0.0165 to 0.0180 gram of iron In group III are those which contain 3,601 to 4,000 calories, 91 to 100 grams of protein, 0.85 to 0.93 gram of calcium, 1.59 to 1.76 grams of phosphorus, and 0.0181 to 0.020 gram of iron. And in group IV are those which contain over 4,000 calories, 100 grams of protein, 0.93 gram of calcium, 1.76 grams of phosphorus, and 0.020 gram of iron. The arithmetic means of the nutrients yielded by the average family's diet and the standard defiations from the means are also included in Table 3. The mean shown here does not agree with the one shown in Table 1 for the average diet, because they are weighted differently. The figures for Vermont in Table 1 are derived from Table 6. Here the total quantity of each foodstuff consumed was divided by 86 to find the average family diet. The nutrients of this diet were calculated and expressed in terms of the adult-male unit as explained above. The arithmetic means given in Table 3 are derived from the analyses of the 86 diets. The nutrients yielded by each diet were calculated and expressed in terms of the adult-male unit. These were averaged and the results were compared with the standard for measuring the adequacy of the diet. The figures in Table 3 obtained by this method are higher than those in Table 1 because the smaller families on the whole reported a larger food consumption per adult-male unit than the large families.

Table 3 shows that the situation indicated by the figures given in Table 1 is representative. About 75 per cent of the families reported diets which were more than adequate in energy and phosphorus, and approximately 90 per cent of the families reported diets which were more than adequate in protein and calcium. Iron, on the other hand, was inadequate in the diets of almost one-half

Table 4.- The dietaries collected from 86 farm families in Vermont, classified according to adequacy in energy, protein, calcium, phosphorus, and iron*, together with the standard deviation from the arithmetic mean

A - Number and per cent of dietaries classified according to adequacy:

Type of diet	Energy		Protein		Calcium		Phosphorus		Iron	
	Number of families	% of total families	Number of families	% of total families	Number of families	% of total families	Number of families	% of total families	Number of families	% of total families
I	18	21.0	10	11.6	9	10.4	23	26.8	39	45.3
II	15	17.4	6	7.0	4	4.7	8	9.3	7	8.1
III	22	25.6	15	17.4	6	7.0	8	9.3	12	14.0
IV	31	36.0	55	64.0	67	77.9	47	54.6	28	32.6

B - Arithmetic mean of the nutrients and standard deviation from mean:

	% of standard of adequacy**	% of standard of adequacy**	% of standard of adequacy**	% of standard of adequacy**	% of standard of adequacy**
Mean	120	142	168	129	115
Standard deviation	28	37	57	38	38

* The diets are arranged as follows in terms of adequacy: Group I, inadequate; Group II, from just adequate to 9 per cent above; Group III, from 10 to 21 per cent above an adequate diet; Group IV, more than 21 per cent above an adequate diet.

** The standard shown in Table 1 was used to measure the adequacy of the diet.

of the families, due probably to insufficient use of fruits and vegetables.

The standard deviations tell a similar story. They are 28 per cent for energy, 37 per cent for protein, 57 per cent for calcium, and 38 per cent for both phosphorus and iron. This means that the food consumed by two-thirds of the families had an energy value within 28 per cent of the mean, a protein value within 37 per cent of the mean, and so on. That is, the diet furnished from 8 per cent below to 48 per cent above the families's energy need, from 5 to 79 per cent more protein than they needed, from 11 to 125 per cent more calcium than they needed, from 9 per cent below to 67 per cent above their phosphorus need, and from 23 per cent below to 53 per cent above their iron need.

Before concluding that these figures give a true picture of the average farm diet of these 86 families, however, it is necessary to consider the errors which they may be concealing. The figures on which the analysis is based are estimates made by the homemaker of the amount of food consumed during the past year by her family. They were given largely in volumetric terms. For instance, the amount of peaches was sometimes given by the basket, apples by the box, potatoes by the bushel. In some cases less standardized terms were used, such as number of watermelons and bunches of onions. In order to analyze them these figures had to be reduced to pounds, and it is quite possible that for some foods the conversion factor that was used was not correct.

Furthermore, the figures are for foods "as purchased". That is, they include bones, skin, and other inedible parts. Average refuse values, as given by Atwater and Bryant (1)for the various foodstuffs, were assumed in calculating the amount of nutrients available. It is possible, however, that the farm homemaker in preparing the food for cooking may waste a larger percentage of many foodstuffs than was found by Atwater and Bryant. This might be caused by

the family's using the foods of poorer grade. The best grade of potatoes, for instance, may have been sold and those less uniform in size and quality used for the family. This would result in a larger amount of refuse than was assumed in our calculations.

The figures themselves as reported by the homemaker may also contain appreciable errors, although every effort was made by the investigators to obtain accurate estimates. Studies of the amount of foodstuffs furnished by the farm indicate that, measured in terms of energy, 50 per cent or more is commonly furnished (4, p. 8).[3] It would seem reasonable to assume that, with so large a proportion of the family's food provided without direct purchase, the homemaker might have considerable difficulty in estimating accurately what her family consumed during the past 12 months.

Another possible source of error lies in the waste which may be included in the figures given by the farm families. The food which is thrown out to the chickens and hogs may not be a waste from the farmer's standpoint, but from the point of view of the family's food consumption it must certainly be counted as waste. Another source of waste is in the spoilage that occurs in stored foods, such as fruits and vegetables. It would doubtless be difficult for the homemaker on the farm to estimate with accuracy the amount of waste from those sources, and the error here would probably be in the direction of overstatement of food consumption.

A number of studies are needed before we can know the extent to which these possible sources of error have expanded the figures on food consumption here presented. But it is probable that even when sufficient allowance is

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3. In the present study a somewhat lower figure is indicated. Here the foods furnished by the farm yielded but 46 per cent of the total energy.

made for them, the average farm diet will still be seen to provide an abundance of most of the nutrients required. The problem is not so much one of the amount of food consumed as of the balance between the various food groups. This is primarily a problem of education rather than of ability to pay, since the foods which tend to be over or under consumed are usually furnished by the farm itself.

FOOD HABITS ON THE FARM AND IN THE CITY

In attempting to evaluate the figures presented in this report, it will be well to compare them with other food consumption figures. There are three studies containing such figures suitable for comparison. In all of these the data were collected by the survey method, as in this study, and the figures represented estimates of food consumption made by the homemaker. Hawley studied the food habits of 1331 farm families in Kansas, Kentucky, Missouri, and Ohio in 1922-23 (4); Funk made a study of the food consumed by 950 farm families in 14 states in 1912-14 (3); and the United States Bureau of Labor Statistics gives a detailed report of the consumption of 128 foodstuffs by 11,900 families in its cost of living study made in 1918-19, in which were included 12,096 workingmen's families from 92 localities in 42 States (8).

In making a comparison of the results of the four studies, it is necessary to use the figures for the adult-male unit. Since the energy scale used by the United States Bureau of Labor Statistics gives consumption figures about 4 per cent higher than the one used in this study[4], its figures were

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4. The corrective factor 8 per cent, which was used in the preliminary report of the food consumed in selected localities in Kansas, Kentucky, Missouri, and Ohio, was found to be too high. Further study of the relationship between the two energy scales showed that our scale gives consumption figures for this study 4 per cent below those obtained by the U. S. Bureau of Labor Statistics.

lowered by that amount. In Funk's study only two divisions were made in the dietary scale, children of 12 years of age and under being counted as one-half an adult-male unit and all persons over 12 years of age as requiring the same food as an adult-male unit. Since for his families this gives results similar to those obtained by the energy scale used in the present study, no adjustment was made in Funk's figures.

The nutrients furnished by the average diets reported by Hawley and by Funk for the farm family and by the United States Bureau of Labor Statistics for the workingman's family, as well as the distribution of energy among the different food groups, were calculated by the writer and are included in Tables 1 and 2. Since the number of adult-male units in terms of protein and mineral requirements was not calculated for the two studies made by Funk and by the United States Bureau of Labor Statistics, the energy unit was used. Their figures for protein and minerals, therefore, are higher than they would have been if the double scale employed in this study had been used.

The present study and the ones made by Hawley and by Funk show the food habits of farm families. A comparison of the figures given in these three studies shows that the families apparently consumed more food than they needed. On the whole, however, the nutrients were provided in much larger quantities by the families previously reported by Hawley and by those reported by Funk than by the 86 families in Vermont. Calcium is the only nutrient that shows fairly close agreement in the three studies. In all of them from 50 to 60 per cent more calcium was reported than is estimated as needed.

The use of fatty foods, sweets, and cereals, as shown in Table 2, is similar in the three studies. The consumption of meat, eggs, and cheese in

Vermont approximates that in Funk's study, whereas the use of milk, cream, fruits, and vegetables in Vermont is similar to that of the four states studied by Hawley.

Reference to the tables on food consumption given by the different investigators shows that the use of beef, fish, and eggs was similar in Vermont and in the fourteen states studied by Funk. The use of poultry, pork, bacon, fruits and vegetables was considerably lower in Vermont than in any of the other studies, and the use of potatoes was higher. Milk consumption was about the same in Franklin County, Vermont, as in the four states studied by Hawley,

When the average farm diet shown by these studies is compared with that of the workingman's family in the city, as shown in the study made by the United States Bureau of Labor Statistics in 1918-19, greater differences appear. Instead of an excess of nutritive factors in the workingman's diet, there is a deficit in every case except protein. The average consumption figures for this diet yield 15 per cent less energy, 6 per cent less calcium, 5 per cent less phosphorus, and 15 per cent less iron than is estimated as needed. The protein figure is 4 per cent above the estimated requirement.

The difference between the workingman's diet and that of the farmer is caused not by differences in consumption figures for one or two foods, but by the fact that practically all of the foodstuffs are consumed in smaller quantities by the workingman's family. The amount of beef consumed by his family was, to be sure, about the same as that reported by the Vermont farm families, but the latter consumed about twice as much pork, poultry, eggs, and milk as the workingman's family. If the other table and cooking fats used by the workingman's family are included with the butter and lard, the consumption of these foodstuffs by the Vermont families is but slightly higher. Only half as much

sugar and sirup is used by the workingman's family. Purchased bread is of much greater importance in the workingman's diet, but when these figures are expressed as flour it appears that his consumption of this foodstuff is somewhat less than that of the farmer in Franklin County, Vermont. He consumed, on the whole, more fruit and less vegetables than the Vermont farmer.

These differences are expressed in another way in Tables 1 and 2. The total energy of the food consumed by the workingman's family is about 26 per cent below that of the average farm family included in this study. The proportion of energy furnished by milk, cream, and sweets is lower, and that yielded by cereals, is considerable higher in the workingman's diet. The total energy furnished by the food groups is higher in all cases in the farm diet.

We would probably not be justified in concluding from these results that the workingmen's families actually consume 26 per cent less food than the Vermont farm families. The differences may be caused in part by the suitability of the survey method for collecting data from the two types of families. The results that were obtained indicate that the method is possibly better adapted to getting accurate figures from the workingman's family than from the farm family. This is suggested by the fact that the average workingman's diet approaches somewhat nearer the standard that was adopted than does the diet of the average farm family. The differences in suitability may be caused to a large extent by the purchasing habits of the two groups. The workingman purchases practically all his food. On the basis of calories, the farm family usually purchases less than 50 per cent of the food consumed by the family (4, p. 8), and on the basis of money value about 33 per cent (6, p. 17). It is only reasonable to conclude that the homemaker on the farm would be able to

estimate the family's food consumption less accurately than the city woman who goes out to buy all her food.

In the matter of waste the amount is probably greater on the farm, due to the table waste which is thrown out to the chickens and hogs, and the spoilage of stored foods. As was suggested above, it is quite possible that the farm homemaker found it difficult to make suitable deductions for these losses, and this would probably account in part for the higher estimates given by her.

There may also be a difference in the quality of some of the foodstuffs used by the two groups, as pointed out previously, resulting in a difference in the amount of refuse in preparing them for the table. The foodstuffs which are sold in the city markets are usually fairly well graded, while the farm families may have kept for their own use a supply which is less uniform in size and quality. If such a variation exists, it would further explain the marked difference in nutritive value between the two diets.

Careful studies of the food consumption of the two groups would probably show, however, that the meat, eggs, milk, cream, fruit, and vegetable consumption of the farm family is higher than that of the workingman's family, and that the consumption of cereals is somewhat lower. The proportion of energy derived from the fatty foods and sweets may be similar in the two groups.

MONEY VALUE OF FOOD

As was stated above, the prices given by the farm families for furnished and purchased foods were not on the same basis. Those recorded on the schedule for purchased foods were the prices paid by the homemaker at the grocery or market. The foods furnished by the farm were valued at the prices which would have been received had they been sold in the local market.

Because of this difference the purchased proportion of a given foodstuff is not always the same in Table 6 when expressed in value and in pounds. For eighteen foodstuffs in Table 6 the total value purchased is from 1 to 59 per cent greater than the per cent of total pounds purchased. This indicates that the furnished prices used for these foods were lower, and in some cases considerably lower, than the purchased prices. In only nine cases is there evidence that a higher price was used for furnished foods than for purchased, and in only one case is the difference greater than 4 per cent.

On the whole, therefore, the method of evaluating the foods furnished by the farm gives prices lower than those paid in the local market for purchased foods. This discrepancy, of course, affects the figures for the total value of food, and any conclusions concerning value must therefore be regarded as tentative. Since the figures for the four states which were included in a previous report by the writer (4) show the same irregularity in respect to the value of the food consumed as is shown in Vermont, a comparison of them is justified. The average for the four states is therefore shown in Table 4 for comparison with the average value in Franklin County, Vermont. Such figures as are given by Funk and the United States Bureau of Labor Statistics are also shown.

The data in Table 4 show that in Franklin County, Vermont, a larger proportion of the total value of all family living went for food than in the other four states studied by the writer. The food consumed by these farm families absorbed on the average 44 per cent of the total, or 4 per cent more than the average of the four states. The Vermont farm families also purchased a larged proportion of the food they consumed. Here the figure is 42 per cent of the total value for food; the average for the four states is 33 per cent.

Table 4. - Average money value of the food consumed per family during one year, and its proportion of the average value of all family living, as shown in four studies.

Study	Year	Families included	Average size of household Adult-male energy units	Average value of all family living	Food		
					Average value per family	Proportion of average value of all family living	Proportion purchased
		Number	Number	$	$	%	%
Hawly Vermont	1923-24	86	4.8	1,546*	672*	44	42
Av.Kan., Ky.,Mo.,O	1923	1331	4.2	1,559	616	40	33
Funk	1912-14	950	4.8	not given	448	-	42
Bureau of Labor Statistics	1918-19	12096	3.5**	1,434	549	38	not given

* These figures are slightly lower than those quoted by Kirkpatrick (6, p. 17), due to an error discovered by further editing.

** This figure was increased 4 per cent to make it comparable with those obtained by the use of the scale given in this report.

Comparing these figures with Funk's (3) we find that in his study of farm families 42 per cent of the value of the food consumed by the average family was purchased. His method of pricing furnished foodstuffs was similar to the one used in the study reported here. He states that average farm prices were used in arriving at the value of the food furnished by the farm. Since he included only the food, fuel, and use of house in his study, however, a comparison cannot be made between the proportion of total family living expended for food in the two farm studies. Among the workingmen's families studied by the United States Bureau of Labor Statistics in 1918-19 an average of 38 per cent of the total expenditures went for food (8). This is somewhat lower than the proportion shown by the farm families studied by Hawley.

The total value of food per man per year in the different studies and the proportion going for the various food groups are presented in Table 5. The average value of the yearly food bill in Franklin County, Vermont, was $141 per adult-male unit, 58 per cent of which went for animal foods and 42 per cent for vegetable. The difference in this allocation would probably be somewhat greater if retail prices had been used throughout because of the effect of the price-method that was used on beef, pork, mutton, bacon, lard, and milk[5] (all animal foods), and because of the importance of these foods in the farm diet. The proportions going for the various food groups are: 25 per cent for meat, eggs, and cheese; 20 per cent for milk and cream; 14 per cent for fatty foods; 16 per cent for fruits and vegetables; 10 per cent for cereals; and 15 per cent for other foods.

5. The prices used for these furnished foods were: beef, 8 cents per pound; pork, bacon and lard 13 cents per pound; mutton, 15 cents per pound; milk, 8 cents per quart. These prices are considerably below the retail price as given by the U. S. Bureau of Labor Statistics. The prices used for furnished fruits, vegetables, and cereals were in closer agreement with published retail prices.

Table 5. - Average value of the food consumed per man per year, and the distribution of value among the various food groups, as shown in three studies of farm families.

Study	Year	Total food	Meat, Eggs, Cheese	Milk, Cream	Fatty foods	Cer-cals	Fruits Vege-tables	Sweets, Miscel-lane-ous	Total Animal Foods	Total Vege-table Foods
		$	$	$	$	$	$	$	$	$
Hawley Vermont	1923-24	140.55	34.80	28.15	20.16	14.26	22.65	20.53	81.82	58.73
Av., Kan., Ky., Mo. & Ohio	1922-23	147.42	41.69	28.47	16.96	14.50	28.60	17.20	86.73	60.69
Funk.	1912-14	94.00	--	--	--	--	--	--	54.50	39.50

Per cent

		%	%	%	%	%	%	%	%	%
Hawley Vermont	1923-24	100	25	20	14	10	16	15	58	42
Av. Kan. Ky., Mo. & Ohio	1922-23	100	28	19	12	10	19	12	59	41
Funk	1912-14	100	--	--	--	--	--	--	58	42

Although Table 4 shows a higher value for the food consumed by these Vermont farm families than it does for the average of the four states previously studied by Hawley, Table 5 shows that the value per adult-male unit was lower in Vermont. Food prices were 1 per cent higher in 1923-24 than they were during the year 1923 when the four states were studied (9). When adjusted to a comparable price level figures for the two - $141 per man per year for Vermont and $149 for the other four states - show that the value of food consumed by the Vermont families is 5 per cent less than that used in the other four states, but it yielded 12 per cent less energy (Table 1). The distribution of value among the various food groups is on the whole similar, the greatest difference occuring in the proportion going for meat, eggs, cheese, and fruits and vegetables. The proportion for both groups of foods was smaller in Vermont. The proportion that went for animal and vegetable foods, however, is practically the same in the two studies.

A comparison of the average value of the food consumed by the families included in this study with that of the farm families studied by Funk shows that his figures are somewhat lower than ours. Food prices were 47 per cent higher in 1923-24 than they were in 1912-14, the years covered by Funk's study (9). After adjusting his value - $94 per man per year - for this difference in price level, we find that the food consumed by his families averaged $138 per man per year as against $141 for the families in Vermont. This is a difference of only 2 per cent, but the food of the Vermont families yielded 10 per cent less energy. It seems, therefore, that the average diet of these Vermont families was relatively more expensive than was that of the other farm families. In both of these studies 58 per cent of the total value of food went for animal food.

The United States Bureau of Labor Statistics makes no analysis of the

distribution of the food costs for the workingman's family. When the total expenditure for food, $159 per man per year in 1918, is adjusted to provide for differences in price level[6], we find that his food would have cost the workingman $139 per adult-male unit in 1923-24. This is 1 per cent less than the figure for the farm families in this study. But if the food furnished by the farm is valued at the prices paid for purchased foods in Vermont, the farm diet would be valued at about $160 per man per year. On this basis the workingman's food cost approximately 13 per cent less than the farmer's. Yet it yielded 26 per cent less energy. It would seem, therefore, that on either basis the diet of the workingman is relatively more expensive. These figures, suggesting as they do that the farmer has an economic advantage over the city workingman in his food supply, need further analysis and interpretation.

Turning to the value of the food of the individual families in Vermont we find that the standard deviation from the average is on the whole as great as it is for the various nutrients shown in Table 3. The arithmetic mean for the value of the food consumed per man per year by these families, like those for the nutrients, does not agree with the values given for the average diet because the smaller families tended to report relatively higher food consumption figures. The mean value of food for the 86 families is $150 per man per year, with a standard deviation of $49. This means that the value of the food consumed by two-thirds of the families in terms of the adult-male unit was between $101 and $199. This is a deviation of 33 per cent from the mean value. The standard deviation for the nutrients were similar -- they ranged from 28 to 57 per cent from their means.

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6. The index number for 1918 is 163; for June, 1923, to June, 1924, it is 147 (9, p. 13).

Table 6. - Average quantity and value of the various foodstuffs consumed during one year by 86 farm families in Franklin County, Vermont, for the year ending June 1, 1924

Kind of food	Average per adult-male unit		Average per family		Families using	Proportion purchased	
	Quantity	Value	Quantity	Value		Pounds	Value
	Lbs.	$	Lbs.	$	Number	%	%
Meat, fish eggs							
Beef	54.6	9.17	261.0	43.89	79	49.0	75.0
Mutton	0.5	.09	2.0	.44	2	47.0	60.0
Pork	36.8	5.60	176.0	26.83	80	25.0	38.0
Poultry	14.6	3.62	70.0	17.34	76	0.6	0.5
Veal	1.9	.29	9.0	1.33	7	0.0	0.0
Fish	3.3	1.83	40.0	3.74	76	93.0	92.0
Eggs	48.5	12.51	232.0	59.87	85	3.0	3.0
Milk, cream, cheese							
Whole milk	510.8	19.18	2445.0	91.80	86	0.0	0.0
Skim milk	8.5	.08	41.0	.36	7	0.0	0.0
Cream	32.3	8.82	155.0	42.20	57	0.0	0.0
Buttermilk	5.1	.07	25.0	.34	4	0.0	0.0
Cheese	4.2	1.40	20.0	6.69	64	100.0	100.0
Cottage cheese	1.6	.29	8.0	1.41	11	0.0	0.0
Fatty foods							
Bacon, salt pork	11.1	1.49	53.0	7.12	73	12.0	18.0
Butter	27.9	13.37	133.0	63.93	84	55.0	55.0
Salad oils	0.1	.06	0.5	.27	9	100.0	100.0
Peanut butter	3.0	.73	14.0	3.49	64	100.0	100.0
Other table fats	1.7	.49	8.0	2.37	12	100.0	100.0
Lard	23.5	3.86	112.0	18.47	83	77.0	83.0
Other cooking fats	0.9	.16	4.0	.76	6	100.0	100.0
Sugar, sirups							
Honey	1.4	.38	7.0	1.80	38	46.0	48.0
Maple sirup	20.2	3.91	97.0	18.70	75	7.0	13.0
Molasses	4.2	.29	20.0	1.38	53	100.0	100.0
Other sirups	0.9	.03	4.0	.13	11	100.0	100.0
Sugar	74.2	6.88	355.0	32.93	86	100.0	100.0
Sugar, brown	0.3	.03	2.0	.13	11	100.0	100.0
Sugar, maple	10.1	2.09	48.0	10.01	59	0.7	0.7
Sugar, powdered	0.5	.06	2.0	.29	12	100.0	100.0
Cereals							
Bread	11.7	1.17	56.0	5.59	59	100.0	100.0
Cookies	1.1	.26	5.0	1.27	20	100.0	100.0
Cornmeal	15.3	.77	73.0	3.70	74	97.0	97.0
Cornstarch	1.1	.14	5.0	.66	67	100.0	100.0
Crackers	11.8	1.05	57.0	5.01	74	100.0	100.0
White flour	179.2	7.73	858.0	37.01	86	100.0	100.0
Flour, graham & whole-wheat	9.0	.44	43.0	2.10	63	95.0	95.0
Flour, other	0.55	.03	2.0	.12	9	100.0	100.0
Hominy	0.1	.01	1.0	.03	3	100.0	100.0

Table 6. - Continued. Average quantity and value of the various foodstuffs consumed during one year by 66 farm families in Franklin County, Vermont, for the year ending June 1, 1924

Kind of food	Average per adult-male unit		Average per family		Families using	Proportion purchased	
	Quantity	Value	Quantity	Value		Pounds	Value
	Lbs.	$	Lbs.	$	Number	%	%
Macaroni, noodles	2.0	.34	10.0	1.63	61	100.0	100.0
Rice	2.8	.25	14.0	1.21	73	100.0	100.0
Rolled oats	9.5	1.00	46.0	4.77	71	100.0	100.0
Tapioca	0.5	.07	2.0	.33	36	100.0	100.0
Wheat cereals	2.6	.47	12.0	2.25	34	100.0	100.0
Other cereals	3.0	.53	14.0	2.53	51	100.0	100.0
Fruits							
Apples	17.7	.74	85.0	3.53	51	73.0	75.0
Bananas	8.1	1.02	39.0	4.91	70	100.0	100.0
Berries	7.9	1.47	38.0	7.06	67	17.0	18.0
Currants	0.1	.02	0.3	.10	2	0.0	0.0
Grapes	0.2	.03	1.0	.14	10	56.0	74.0
Grapefruit	2.0	.16	10.0	.77	21	100.0	100.0
Lemons	2.3	.27	11.0	1.30	70	100.0	100.0
Muskmelon	0.2	.01	1.0	.04	2	10.0	9.0
Oranges	8.4	.81	40.0	3.86	75	100.0	100.0
Peaches	2.8	.15	13.0	.74	34	88.0	91.0
Pears	1.0	.05	5.0	.26	11	62.0	58.0
Pineapple	-	.01	0.1	.02	2	100.0	100.0
Plums	0.3	.02	1.0	.09	7	88.0	73.0
Rhubarb	3.5	.37	17.0	1.73	45	2.0	1.0
Watermelons	2.2	.05	10.0	.15	3	0.0	0.0
Canned fruit	0.3	.06	1.0	.28	6	100.0	100.0
Dried fruit							
Apples	0.1	.02	0.4	.07	3	100.0	100.0
Apricots	0.3	.07	1.0	.34	16	100.0	100.0
Peaches	0.1	.01	0.2	.05	4	100.0	100.0
Prunes	1.2	.19	6.0	.90	48	100.0	100.0
Raisins	5.2	.74	25.0	3.56	81	100.0	100.0
Vegetables							
Asparagus	0.4	.09	2.0	.45	7	0.0	0.0
Beans, lima	4.1	.37	20.0	1.74	46	0.0	0.0
Beans, string	7.1	.51	34.0	2.41	74	0.0	0.0
Beets	10.4	.22	50.0	1.05	66	.6	0.6
Cabbage	13.5	.59	65.0	2.82	62	7.0	5.0
Carrots	5.8	.13	28.0	.61	58	4.0	4.0
Cauliflower	0.4	.10	2.0	.48	14	5.0	4.0
Celery	0.2	.02	1.0	.11	4	28.0	44.0
Corn	24.1	1.03	115.0	4.92	52	.9	1.0
Cucumbers	19.2	.42	92.0	2.00	69	.2	0.7

*The weights for the foods that were canned on the farm were given in terms of the fresh food, and are therefore not included with canned foods.

Table 6. - Continued. Average quantity and value of the various foodstuffs consumed during one year by 86 farm families in Franklin County, Vermont, for the year ending June 1, 1924

Kind of food	Average per adult-male unit		Average per family		Families using	Proportion purchased	
	Quantity	Value	Quantity	Value		Pounds	Value
	Lbs.	$	Lbs.	$	Number	%	%
Greens	2.1	.14	10.0	.65	41	0.0	0.0
Lettuce	4.2	.47	20.0	2.24	61	0.0	0.0
Onions	8.6	.41	41.0	1.96	58	68.0	70.0
Parsnips	1.2	.03	6.0	.15	21	0.0	0.0
Peas	9.8	.74	47.0	3.52	63	.05	0.1
Peppers	-	-	0.1	.02	2	71.0	79.0
Potatoes	428.8	7.78	2053.0	37.24	86	.9	1.0
Radishes	6.6	.44	32.0	2.10	50	0.0	0.0
Salsify	0.1	.01	0.3	.02	2	0.0	0.0
Spinach	0.8	.05	4.0	.26	11	0.0	0.0
Squash & pumpkin	9.9	.48	47.0	2.30	52	4.0	3.0
Sweet potatoes	0.3	.02	2.0	.08	8	44.0	42.0
Tomatoes	22.6	.65	108.0	3.13	62	2.0	2.0
Turnips	10.4	.18	50.0	.86	52	4.0	4.0
*Canned vegetables	2.8	.36	13.0	1.70	37	100.0	100.0
Dried vegetables:							
Beans	13.3	1.11	64.0	5.31	68	14.0	16.0
Peas	0.5	.05	2.0	.22	17	80.0	87.0
Miscellaneous							
Baking powder	1.3	.46	6.0	2.19	73	100.0	100.0
Chocolate	0.2	.08	1.0	.37	28	100.0	100.0
Cocoa	1.4	.36	7.0	1.72	77	100.0	100.0
Coconut	0.1	.06	0.5	.27	36	100.0	100.0
Coffee	4.2	1.85	20.0	8.82	81	100.0	100.0
Extracts	0.5	.50	2.0	2.38	82	100.0	100.0
Gelatin	0.1	.13	1.0	.60	29	100.0	100.0
Olives & pickles	0.3	.13	1.0	.63	25	100.0	100.0
Coffee substitute	0.3	.08	2.0	.38	14	100.0	100.0
Salt	13.0	.31	62.0	1.51	77	100.0	100.0
Nuts	3.5	.21	16.4	1.01	36	9.0	68.0
Soda	1.9	.17	9.0	.79	81	100.0	100.0
Spices	0.4	.15	2.0	.73	73	100.0	100.0
Tea	2.2	1.28	11.0	6.12	81	100.0	100.0
Vinegar	15.8	.74	76.0	3.55	81	11.0	14.0
Yeast	0.5	.35	2.0	1.67	62	100.0	100.0
Total		140.55		672.37			

* The weights for the foods that were canned on the farm were given in terms of the fresh food, and are therefore not included with canned foods.

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